TECHNICAL REVIEW COMMENTS

The Great Sand Hills
Regional Environmental Study
(Final Report - May 2007) *as Prepared by:*
The Great Sand Hills Scientific Advisory Committee
for the Government of Saskatchewan

Great Sand Hills
(South-Western, Saskatchewan)

SASKATCHEWAN ENVIRONMENT
ENVIRONMENTAL ASSESSMENT BRANCH
SEPTEMBER 2008

TABLE OF CONTENTS

PREFACE iv

1 Environmental Assessment Process 1

Introduction 1

Technical Review 2

Public Review 3

Ministerial Decision 3

2. Setting the Context 4

Introduction 4

The Great Sand Hills of Saskatchewan, 1980 5

Great Sand Hills Land Use Strategy, 1991 6

The Great Sand Hills Planning District, 1994 9

The Great Sand Hills Land Use Strategy Review, 2004 10

3. Great Sand Hills Regional Environmental Study, 2007 13

Introduction 13

Overview of Objectives and Activities 14

Baseline Assessment Report 16

Projected Trends and Alternative Future Scenarios 20

Preferred Scenario 22

Recommendations 23

4. Technical Review Comments 24

Introduction 24

Biodiversity and Conservation Lands Designation and Management 25

Core Biodiversity and Non-Reserve Areas 25

Land Use Zoning 26

Land Management Plans 27

Fire Ecology 27

Wide Ranging Species 28

Rare-Species Database & Ords Kangaroo Rat 28

Wetlands 29

Communications Plans for Best Management Practices 29

Governance 29

Strengthening the Representation and Mandate of the GSH Planning District Commission 29

Clarifying the Mandate of the GSH Planning District Commission as One of Maintaining Ecological Integrity of the GSH and Adopt a New Structure for the Commission 30

Representative Membership on the GSH Planning District Commission 30

Enhance Capacity and Coordination for Environmental Follow-up through the GSH Planning District Commission and the Commission's Environmental Monitoring Mandate 30

Centralized Information/Resource System for the GSH Planning District Commission 31

Sustained Funding for the GSH Planning District Commission 31

Special Funding Arrangements to Support Research in the GSH 32

Acts and Regulations 32

The Environmental Assessment Act 32

Review of GSH RES under *The Environmental Assessment Act* 32

Cumulative Effects be considered in EA Process 33

Develop further guidance and decision support materials for EA related to 'development' in the GSH 34

Add the requirement for follow-up to *the EA Act* 34

The Provincial Lands Act 35

The Heritage Property Act 35

Reducing Impacts 36
New well pad surface leases/roads and trails 36
Distributed Watering Systems 37
Fragmentation by Linear Features 37
Environmental Monitoring 38
Establish ongoing environmental monitoring program for the GSH 38
Reclamation 38
Review existing reclamation guidelines and update. 38
Reclamation Fund 39
Reclamation monitoring 39
Reclamation and restoration 39
Native Seed Sources 39
Sustaining Regional Communities 40
Compensating Agricultural leaseholders 40
First Nations Consultation 40
First Nations council of Elders and Traditionalists 41
Heritage Resources 41
Labour and Employment 42
Earnings and New Construction 44
Economic Concentration and Capital Investment 44
Manufacturing 45
Ranching 46
Tourism and Eco-tourism 47
Gas Development 47
Concluding Comments 48
Conclusion of the Technical Review 49
References 50

LIST OF TABLES AND FIGURES

Table 1. Valued Ecosystem Components used for the GSH RES 15

Figure 1. Regional Context (from *GSH Land Use Strategy, 1991*) 7
Figure 2. GSH Land Use Strategy Review Area – 2004 report 11
Figure 3. Great Sand Hills – Study Area and smaller Review Area 14
Figure 4. Overall Framework 15
Figure 5. Distribution of EIAs, Gas wells and ES1 & ES2 lands 17
Figure 6. Core Biodiversity Areas identified using MARXAN 21

PREFACE

These Technical Review Comments are provided by the Environmental Assessment Branch, Ministry of Environment as supporting information for the public review of ***The Great Sand Hills Regional Environmental Study-Final Report*** prepared by The Great Sand Hills Scientific Advisory Committee for the Government of Saskatchewan.

The Government of Saskatchewan carries considerable responsibility in relation to the long term management of development within the region of the province known as the Great Sand Hills. Approximately 85% of the lands within the most sensitive areas of the region are held by the Crown. These lands are accessed through the issuance of grazing, mineral and surface leases. Human activity on this landscape is regulated directly by the province or indirectly through provincial planning and development powers delegated to the local municipalities. It was determined through the 2002 Great Sand Hills Land Use Strategy Review that a comprehensive plan for the area's long term management was needed. The most recent examination of the region thus began in 2004. Lead responsibility for this initiative was assigned to the then-named Department of Environment but to address criticisms of earlier study processes that had effectively limited implementation of their findings, this latest impact study would be managed by a committee of individuals with expert knowledge relevant to the questions at hand but whose affiliations were both independent of and external to government. Arms-length from government but at government's request, the Scientific Advisory Committee (SAC), so created, used impact assessment methods and principles to assess development alternatives for the Great Sand Hills region and design a development scenario that would "meet social, economic, and ecological goals simultaneously and in such a way that benefits to all three categories are realized and sustained over time" and ensure ecological integrity within the Great Sand Hills is maintained. The basic research approach used by the Scientific Advisory Committee in the conduct of this impact assessment was one of scenario analysis. They delivered their findings to government in a report entitled *The Great Sand Hills Regional Environmental Study: Final Report* (May 2007).

The project proposed therein i.e., a comprehensive plan intended to guide government's collective administrative oversight in implementing the preferred development scenario for the region, if advanced by the Crown, would constitute a "development" as this term is understood within *The Environmental Assessment Act* (the Great Sand Hills region is, as a geographic area and in relation to elements found therein, representative of unique, rare or endangered environmental features). As such, the Government of Saskatchewan is seeking an approval under *The Environmental Assessment Act*. Such

approval requires that an impact assessment of the proposed project (i.e., plan or scheme) be conducted. The impacts of the development project were assessed by the SAC (as government's consultants) through impact study processes integrated within the design / planning processes undertaken.

This document has four major parts:

The first part provides an overview of the provincial environmental assessment and review process. It outlines the events and activities which led to the environmental impact statement being released for public review and describes how the public can provide comment to the Minister on recommendations and the proposed development approach for the Great Sand Hills area.

The second part sets the general context within which the development is being proposed and the events that led to the submission of the environmental impact statement in July 2007.

Section three is a brief summary of the regional environmental study and its recommendations. This summary is intended to provide information to assist the reader in deciding whether they are interested in finding out more about the proposed development plan for the Great Sand Hills (GSH). It is not intended to be a full representation of the regional environmental study (RES) and recommendations for development. Interested readers should visit a review center to read the report and supporting documents at one of the following locations: the University of Regina and University of Saskatchewan libraries; the Legislative Library in Regina; the public libraries in Abbey, Fox Valley, Golden Prairie, Gull Lake, Hazlet, Leader, Maple Creek, Piapot, Regina, Saskatoon, Sceptre, Swift Current and the Environmental Resource Centre (c/o SES) in Saskatoon; the RM offices of Big Stick#141, Clinworth #230, Fox Valley #171, Gull Lake #139, Happy Land #231, Miry Creek #229, Piapot #110 and Pittville #169.. In addition the entire RES and supporting documents are available on the internet on the Ministry of Environment homepage: http://www.environment.gov.sk.ca/

The final section of the *Technical Review Comments* document provides a summary of the comments received by the Environmental Assessment Branch during the technical review of the EIS from the various government agencies and Ministries who make up the EA Review Panel.

1 Environmental Assessment Process

Introduction

1. The EA Process
- Introduction
- Technical Review
- Public Review
- Ministerial Decision

The Environmental Assessment Branch received an environmental impact statement (EIS), "The Great Sand Hills Regional Environmental Study: Final Report" (May 2007), from the Minister of Environment in July of 2007, for review in accordance with *The Environmental Assessment Act* (*The EA Act*) where this statement examines the implications of development within the Great Sand Hills and proposes a strategic land development and management plan built on an environmental assessment model and focused on the long-term sustainability of this region of Saskatchewan. In addition, drawing on the study's conclusions regarding areas that need to be protected to conserve this unique part of our landscape, the Government chose to work towards the delineation of additional Ecological Reserve land in the Great Sand Hills.

The Great Sand Hills Regional Environmental Study: Final Report (May 2007) has the elements necessary to comprise an environmental impact statement as this term is understood within the practice of environmental assessment and in relation to *The Environmental Assessment Act*. It provides a coherent statement of the potential impacts of implementing the recommended development plan for the Great Sand Hills region and the measures that could be taken to reduce and remedy them. Typical of any environmental impact statement, the report i) includes an executive summary; ii) speaks to the need for and objectives of development within the region; iii) references applicable legislative, regulatory and policy frameworks; iv) describes a preferred development scenario and how it could be implemented; v) compares this development plan with the alternatives to it; vi) describes the project setting, including the relationship to other proposals, current land uses and relevant plans for the area; vii) describes baseline conditions and socio-economic, cultural and biophysical (i.e., environmental) trends; viii) reviews the public consultation process and shares the views and concerns expressed by stakeholders and explains how these have been taken into account; ix) discusses the main impacts (positive and adverse) that are identified as likely to result from the proposed plan, their characteristics (magnitude, timing, occurrence etc.,) and proposes mitigation measures; x) describes likely residual effects and any uncertainties and limitations of data; xi) evaluates the significance of the residual impacts and identifies the best practicable environmental option; xii) proposes an environmental management plan that identifies how proposed mitigation and monitoring measures could be translated into specific actions as part of impact management and xiii) includes appendices of all supporting technical information.

On July 11, 2007 the Minister of Environment (i.e., the minister responsible for this initiative's lead agency) submitted the SAC-developed report, as delivered, as government's impact statement related to the development project for consideration under *The Environmental Assessment Act (The EA Act).*

The RES 'Final Report' and supporting documents (see the DVD inside the back cover of the report) represent an integrated, sustainability-based, strategic-level environmental assessment, similar to those done for forest management areas, fire management plans, master parks plans or large subdivisions. It seeks to provide insight into the social, cultural, economic and biophysical constraints for future development and to suggest ways in which development could occur without adversely impacting the ecological integrity of the Great Sand Hills, a "globally significant regional ecosystem". Combined, the recommendations constitute a strategic level land development and management plan and EIS, with monitoring as a necessary component to ensure "progress toward sustaining the natural, human, and economic capital of the study area".

Technical Review

Technical Review provides the government's technical perspective on the proposed development

The EIS was reviewed by provincial and federal agencies to allow various ministry and agencies with the opportunity to provide their technical comments on the EIS and its supporting documents. The *Technical Review Comments* (this document) have been prepared to assist the public and government decision-makers in their review of the EIS and their evaluation of the environmental acceptability of the proposed development approach. In preparing technical review comments, the department focuses on those factors which are considered to be of primary significance with respect to the proposed development and to its environment. The public is advised to read the actual EIS if they wish to get a more complete understanding of issues.

Public Review

Public comment is invited on the EIS (GSH RES) and proposed development approach for the Great Sand Hills

Once the technical review has been completed, the public is invited to review the EIS (GSH RES-Final Report) along with the *Technical Review Comments* and provide their comments to the Minister of Environment in relation to the proposed development approach for the GSH area.

The general public has had access to the EIS (GSH RES - Final Report) in both hardcopy (limited production) and digital format since July 2007, the same time that the EIS was delivered to the Environmental Assessment Branch to initiate the technical review.

The public is now invited to provide written comments to the Minister on the EIS (GSH RES) and the environmental implications of the proposed development approach for the Great Sand Hills for a period of 60 days. To ensure consideration of written comments they must be submitted to Ministry of Environment **no later than Tuesday December 16th, 2008** at the following address:

Ministry of Environment - EAB
Room 486, 3211 Albert Street
Regina SK S4S 5W6
(re: EIS-GSH RES)

The Scientific Advisory Committee (SAC) held a number of meetings throughout the development of the EIS and plan and has used these meetings in the development of their documents. As the public has already had some opportunity to be involved in the content and context setting of the GSH-RES, public meetings/workshops chaired by the Ministry of Environment have not been prescheduled. Depending on the nature of the comments received during the EIS public review period, meetings/workshops may be scheduled with the intent of finding solutions to the issues being raised through the public review.

Ministerial Decision

The Minister considers both the public and technical review comments when making their decision.

Comments received during the public review of the EIS, together with information generated during the technical review, will be submitted to the Minister of Environment for consideration. The Minister, under section 15 of *The EA Act*, may give Ministerial Approval to proceed with the development, with any terms and conditions that the Minister considers necessary or advisable, or the Minister may refuse to approve the development as proposed.

2. Setting the Context

Introduction

1. **Setting the Context**
- Introduction
- The Great Sand Hills of Saskatchewan, 1980
- Great Sand Hills Land Use Strategy, 1991
- The Great Sand Hills Planning District, 1994
- The Great Sand Hills Land Use Strategy Review, June, 2004

When reading these technical review comments and the GSH RES report one must remember that the study was conducted with a regional focus. Studies undertaken, analysis performed, scenarios developed and ultimately recommendations offered were from this regional perspective. Province –wide application or direct transference to other regions of the Province was not intended and could only be done with careful consideration as to the applicability of doing so and the specifics of the region. This work does, however, offer approaches and insights into undertaking such work focused on sustainability.

Further, in examining the recommendations one should view them as being composed of two basic parts. One part being the objective, target or intent of the recommendation – what is the issue/concern it is identifying that needs to be addressed. The other part is a proposed action that could achieve the fulfilling of the first part. The proposed action need not be the only possible one or even necessarily the best one. It is an action that within the regional context, the SAC felt could reasonably be expected to achieve the desired outcome. Alternative actions, to the same end, should also be considered; particularly where the means proposed might cause public policy concerns.

The Great Sand Hills (GSH) of Saskatchewan are located in South-western Saskatchewan near the Alberta border and are considered to be a "nationally and internationally significant as one of the largest remnants of native grassland in Canada…", one of only five natural sites in Saskatchewan considered of Canadian significance (Mondor 1985:114). The GSH have remained relatively intact with a high ecological integrity due in part to the characteristically sandy soils in the area and the rugged wind blown terrain which has protected the area from cultivation. In recent years the area has seen an increase in disturbance pressures resulting from human activity, including ranching and more recently natural gas exploration and development. Human related disturbance in the area has the potential to result in significant negative impacts on the environment and if allowed to occur at too high a level may impair the ecological functions of the regions. Supporting infrastructure like access trials and roads, watering locations (dugouts, troughs), pipe/flow lining (water & gas), electrical transmission lines and the well sites/pads all contribute to the cumulative impacts that impact negatively on the ecosystem.

The people of Saskatchewan through the provincial Crown own over 85% of the land that makes up the core of the GSH most of which is under grazing leases administered by the Ministry of Agriculture and

additionally protected under *The Wildlife Habitat Protection Act* administered by the Ministry of Environment.

The Great Sand Hills of Saskatchewan, 1980

Epp and Townley-Smith completed a study of the area in 1980.

The GSH area has been studied a number of times including a review of the areas that lie north of the TransCanada highway by H. T. Epp and L. Townley-Smith in 1980. At the time of this study's field work (1977) only 90 wells had been drilled in the area of which 49 had been abandoned. Similarly there was very little disturbance from linear features like roads/trails and 'collector' pipelines. The largest disturbance was in the "common right-of-way' in Township 19, Range 23 and 24, W3M which at the time contained one large oil pipeline and four large gas pipelines. No re-vegetation technique had proven to be effective in either stabilizing the sand or re-creating the natural appearance of the area. The impacts of domestic animal grazing was reviewed and it was found that grazing cattle (5000 head in 1974 in the co-operative and community pastures in the GSH) and sheep (approx 200 head in the GSH) did cause some impact on the native vegetation by changing of the composition of vegetation due to trampling and selective feeding. It was noted that bare paths were created along many fence lines, with blowouts occurring on dunes due to cattle trails. As well, "trampling near wells and other sources of water for livestock can lead to severe, localized erosion. Around some windmills the original surface has been eroded down by as much as a metre or more." The study identified a number of "conflicts and priorities in land use" which would influence how the area could be used or developed in the future, in a manner that would not adversely impact this sensitive ecosystem as best summarized below:

Only 5000 head of cattle and 90 gas wells were present in the area in the late 1970's.

'Ecological processes through time, in response to climatic conditions and trends, have tended to create in the Great Sand Hills a highly varied and surprisingly stable, but delicately balanced ecosystem.'

The development of agricultural monocultures all around the Great Sand Hills further accentuated the island-like nature of the area and its importance as a genetic reservoir where the ecosystem functions under natural processes in a relatively undisturbed state.

"...industrialized man is beginning to come to grips with the problems created by unbridled development. The pendulum has reached its end and is swinging back to a situation in which man views himself as part of the ecosystem..."

"..., the Great Sand Hills ecosystem is a system in delicate balance with a fairly harsh climate, and it is intolerant of greater than natural physical disturbance."

"The Great Sand Hills of Saskatchewan are an example of a relatively undisturbed ecosystem which, if properly managed can continue to provide economic benefits to the residents of this province while maintaining an important ecological and genetic reservoir of living systems and individuals well tuned to the harsh prairie environment through generations of adaptive process. Man has the power to destroy or preserve. The choice is ours!"
Epp and Townley-Smith, 1980, pp. 151

Great Sand Hills Land Use Strategy, 1991

GSH Land Use Strategy, 1991

Ten years later in July of 1990, a planning committee was struck consisting of a number of government Departments and agencies of the time to prepare an integrated land use strategy for the Great Sand Hills. At the time none of the Great Sand Hills had yet been protected by any formal designation aside from portions being listed in *The Critical Wildlife Protection Act*. During the study a moratorium was placed on further development within the "most sensitive areas" of the Great Sand Hills to temporarily halt oil and gas exploration and any other new land uses. The study focused it efforts mainly on the "Moratorium Area" see Figure #1 below and this meant that large areas of relatively sensitive terrain, including Crown lands within the Rural Municipality of Piapot received little to no attention during the landuse planning process.

The report includes a series of specific recommendations for 10 categories ranging from Land Use Zoning to vehicle access.

Four Land Use Zones were identified with declining levels of protection:

- Prime Protection Area
- Special Use Area
- Multiple Land Use Area
- Facility Area

The Landuse Strategy section recommended the establishment of four zones to guide management and development of the Great Sand Hills. These were: Prime Protection Area; Special Use Area; Multiple Land Use Area and Facility Area. Most of the land base was multiple use area where gas development and ranching were permitted subject to provincial and municipal regulatory procedures. The Prime Protection areas were identified as the Yakowan, Rastad and Wachiwan areas. In addition the Straw Road area located approximately 19 km south of Sceptre was recommended to be a 'special use' area with little to no industrial development but some permitted recreational use.

Figure 1. Regional Context (from *GSH Land Use Strategy, 1991*)

From page 2 SEPS, 1991

At the time of this report only 12 oil wells and 5 'waterflood' wells were found in the 'extreme eastern tip of the southern block'...producing approximately '900 cubic metres of oil per month, generating gross yearly revenues and provincial royalties of approximately $2 million and $600,000 respectively.' The report recommended that 're-evaluation would be required should oil development be proposed in the Great Sand Hills'.

By 1990 about 500 gas wells could be found in the Great Sand Hills area representing approximately $5million in royalties.

Gas development activities had increased in the past ten years so that now there were approximately 500 gas wells in the Great Sand Hills area. The report estimated gross production of approximately 58,000,000 m^3 monthly with a selling price of $55 per thousand m^3. This generated approximately $38 million in gross revenues and $5 million in royalties yearly. Clearly non-renewable resource development was starting to change the economic nature of the Great Sand Hills. The report identified that there were many factors that constrained or conflicted with gas development including the rugged land features, sensitive landforms, arid climate, multiple land uses and the costs of waste disposal and water.

One of the recommendations made in the report was in relation to the need for detailed project proposals or environmental protection plans (EPPs) for any seismic or exploration drilling programs in the 'moratorium area' with full environmental impact assessments (EIAs) needed on those exploration programs that were in sensitive areas or otherwise met the criteria in *The EA Act*. An EIA would be required for any proposed gas production plan or program in the 'moratorium area' as such activities would be affecting a rare or unique feature of the environment and therefore need an EIA. The recommendation also spoke to the nature of managing development uncertainty for the proponent by tiering approvals in such a manner that only the first 2 years of highly detailed site specific activity needed to be provided in the EIS with subsequent site specific details being submitted at a later date to ensure they conform with the intent of the Ministerial approval. All development sites were to be surveyed for rare and endangered species and this information was to be provided for both EPPs and EIAs.

In April 1991 after extensive consultation with the public, the Land Use Strategy was approved by Cabinet and implementation of the land use strategy was to begin in earnest.

The Land Management Goals and Objectives were as follows:

Goal: To maintain the Great Sand Hills as a distinctive landscape for social, cultural and economic benefits.

Objectives:

- To maintain biological diversity and the processes necessary to sustain them.

- To protect both representative and unique landscapes.
- To ensure sustainable use of renewable resources.
- To ensure that development of non-renewable resources occurs in an environmentally sound manner
- To protect heritage resources and support heritage awareness and understanding.

The Great Sand Hills Planning District, 1994

In support of the goals and objectives of the 1991 land use strategy discussed above, 'The Great Sand Hills Planning District' (GSHPD) was established in 1994 consisting four R.M.s: Piapot No110, Pitville No. 169, FoxValley No 171 and Clinworth No. 230. Identical development plans and zoning bylaws were adopted by these R.M.s. The role of the GSHPD Commission was to advise member RMs, based on the Development Plan and Bylaw so that uniform administration of land use issues occurred amongst the member R.M.s. The commission consisted of 4 elected R.M. official and a public representative. Between 1992 and 1998 the R.M.s and Province continued working to further refine the GSHPD Development Plan and Zoning Bylaw culminating in the development of the current R.M. zoning controls of, Agricultural/Resource (AR), Environmentally Sensitive 1 (ES1) and Environmentally Senstive 2 (ES2). Provincial environmental approval is required before any development can proceed in either ES1 or ES2 zones. If a project receives provincial environmental approval and is consistent with criteria outlined in the Development Plan, the lands can be re-zoned by the R.M. These zoning controls are administered by the R.M.s not the province and therefore modifications to rezone lands can be done by the R.M.s at their discretion according to the process outlined in the Zoning Bylaws.

This rezoning has been the cause of some public concern as lands have been rezoned from ES1 to ES2 or lower thereby allowing development to occur on what some members of the public thought were 'permanently protected lands'.

In 2001 the R.M. of Piapot No. 110 withdrew from the GSHPD, but still administers the same development plan and zoning bylaws as the rest of the members in the Commission. R.M.'s cannot approve zoning bylaw amendments/construction approvals for 'developments' within the R.M. unless they have first received provincial environmental approval to proceed. R.M.'s can however administer their local planning and development decisions for 'developments' that are approved provincially. That is to say, that while the Minister may have issued an environmental assessment approval for a 'development', unless the development meets the local planning and development requirements/bylaws or other legislated requirements it cannot be constructed and operated.

The Great Sand Hills Land Use Strategy Review, 2004

GSH Land Use Strategy Review

In August of 2002 *The Great Sand Hills Land Use Strategy Review Committee* was established to conduct a review of land use in the Great Sand Hills area. The review was co-chaired by Saskatchewan Environment and Saskatchewan Industry and Resources. The review committee included the then named, "provincial departments of Environment; Government Relations and Aboriginal Affairs; Agriculture, Food and Rural Revitalization and Industry and Resources; the Rural Municipalities of Piapot, Pittville, Fox Valley and Clinworth; and the Great Sand Hills Planning District Commission. The scope of the review was to consider all land and resource management issues in the planning area and adjacent areas of influence as well as to evaluate the effectiveness and relevance of the recommendations made in the 1991 Great Sand Hills Land Use Strategy. This review included a series of public meetings of residents in the area and those interested in the area, which provided additional information for input into the analysis.

By 2004 - 36.5 sections of land in the 'Prime Protection areas' had been withdrawn from the Crown Mineral Lands - 'protected'.

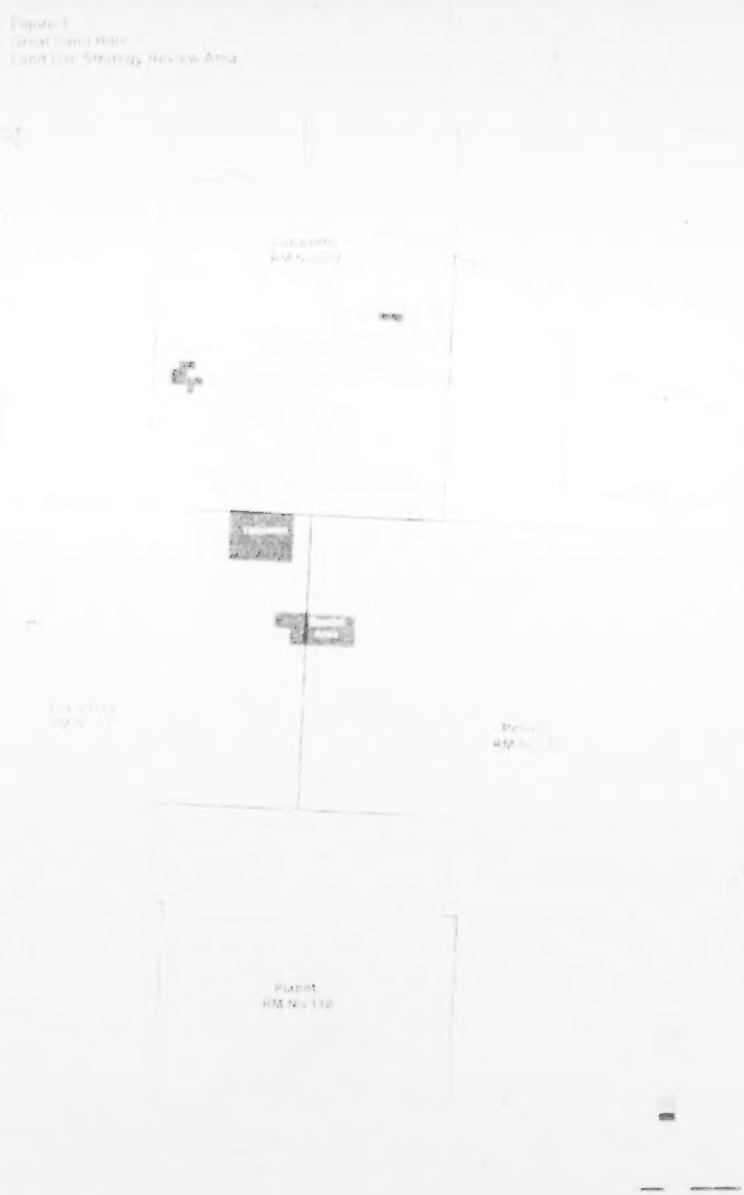
The Review committee completed an evaluation of the 1991 Great Sand Hills Land Use Strategy (Section 2 of the Review Report) and found that most of the objectives (35) and recommendations (77) had been achieved with a great deal of work by the GSHPD Commission and provincial agencies over the 12 year time frame. There was overall agreement that a balanced approach, addressing economic, human and environment needs was important to ensure continued management of the Great Sand Hills. This approach supported the conclusion that there were areas of the Great Sand Hills that could sustain limited development while other areas clearly warranted an enhanced level of protection.

By 2004 - approximately 63% of the Great Sand Hills was under mineral lease.

The 2004 Review indicated that all of the Great Sand Hills was believed to have a high potential for natural gas development and that the existing gas industry in the area represented a very important source of revenue for the municipalities and provincial government. Crown lands represented 85% of the Study review area mostly under grazing leases and much of it designated under The Wildlife Habitat Protection Act (WHPA). Approximately 63% of the area was under some form of mineral lease (gas primarily).

The report also outlined the various department and agencies roles and responsibilities in detail.

Figure 2. GSH Land Use Strategy Review Area – 2004 report



From page 2 GSH – Land Use Strategy Review, 2004

The third section of the Land Use Strategy Review provided a context for the recommendations and was titled *The Great Sand Hills Today.*

Section 4 of the Land Use Strategy Review represented the Review Committee's draft recommendations and implementation option discussions. The Review Committee identified nine areas of interest as follows:

- Protected lands – increase size and protection
- Zoning outside of the additional and existing protected lands
- Environmental assessment
- Ecological monitoring
- Grazing – minimize 'footprint'
- Gas Developments – minimize 'footprint'
- Conservation of wildlife and biodiversity
- Conserve air and water resources
- Administrative procedures.

In particular the area of interest around environmental impact assessment requested that in the 'short term' government needed to act to conduct an environmental impact assessment which set the basis for a comprehensive implementation plan for the long term management of the Great Sand Hills. The assessment was to include but not be limited to biophysical baseline information, cumulative impacts, linear developments, ecological disruption tolerances, reclamation potential and socio-economic impacts analysis.

The Land Use Strategy Review concluded with Section 5 which was a summary and Section 6 which spoke to issues beyond the scope of the review, including Treaty land Entitlement, zoning / management beyond the review area in other municipalities with similar (sensitive) landscapes in Saskatchewan and uncertainty around grazing lease land renewal.

3. Great Sand Hills Regional Environmental Study, 2007

Introduction

The government accepted the 2004 Great Sand Hills Landuse Strategy Review report, described above, in principle calling for increased protection and an environmental impact assessment of the area. The Great Sand Hills Representative Area Ecological Reserve (RAER) was established in March of 2005.

Shortly before this designation, in December of 2004, the Government committed to undertake an environmental assessment of the Great Sand Hills region (a 'Regional Environmental Study' (RES)) that would be managed by an independent institution. A Scientific Advisory Committee (SAC) was assembled to conduct the RES. The study would involve 'strategic assessment' of human activities that affect the ecological integrity, as well as the sustainability, of the area. It would include a comprehensive evaluation of natural, human and economic capital to the Great Sand Hills Region under a number of alternative future scenarios of conservation and development. The assessment was, "designed to identify and meet social, economic, and ecological goals simultaneously and in such a way that benefits to all three categories are realized and sustained over time." pp 3. GSH-RES.

The RES provides a series of recommendations to, "guide human activities in the Great Sand Hills so that the long-term ecological integrity of the area is maintained while a corresponding level of environmental, socio-cultural and economic benefits are realized. The RES was the result of an objectives-led, integrated and strategic assessment process, based on the evaluation of a range of development scenarios and predicted environmental impacts for the Region."

The GSH RES adopted an integrated approach to the environmental assessment, similar to the approach taken over the past 20 years for Forest Management Plans in Saskatchewan, where the assessment of the biophysical, social and economic impacts unfold at the same time as the planning and decision-making. This is often referred to as taking a strategic approach to environmental assessment or 'Strategic Environmental Assessment' (SEA).

While the social, economic and cultural aspects of the environment were collected and analyzed for all 8 of the Rural municipalities that made up the "Study Area', the bio-physical aspects were focused on the smaller "Great Sand Hills Review Area". See Figure 3 (i.e. Figure1-1-2. Regional

map of the Study Area and Review Area, page 7 of the GSH-RES Final Report)

Figure 3. Great Sand Hills – Study Area and smaller Review Area

From page 7 GSH-RES, 2007

Overview of Objectives and Activities

The study undertook a number of activities intended to provide a characterization of the current social, cultural, economic and biophysical factors over the recent decades in the form of a baseline assessment. A number of alternative future scenarios were then developed and the impacts of these scenarios were assessed, projected out to the year 2020, using cumulative risk and vulnerability analysis. A preferred alternative was developed, 'which is intended to balance the natural, social and economic well-being in the spirit of sustainable development'. (GSH-RES 2007, pp 5)

The Baseline studies relied heavily upon the selection of study variables or Valued Ecosystem Components (VECs). The study VECs encompassed the interactions that were of primary concern to regional ecological, social and economic sustainability and to planning and decision making. A total of 20 VECs or VEC groupings were ultimately used based on discussions with stakeholder, communities and First Nations groups.

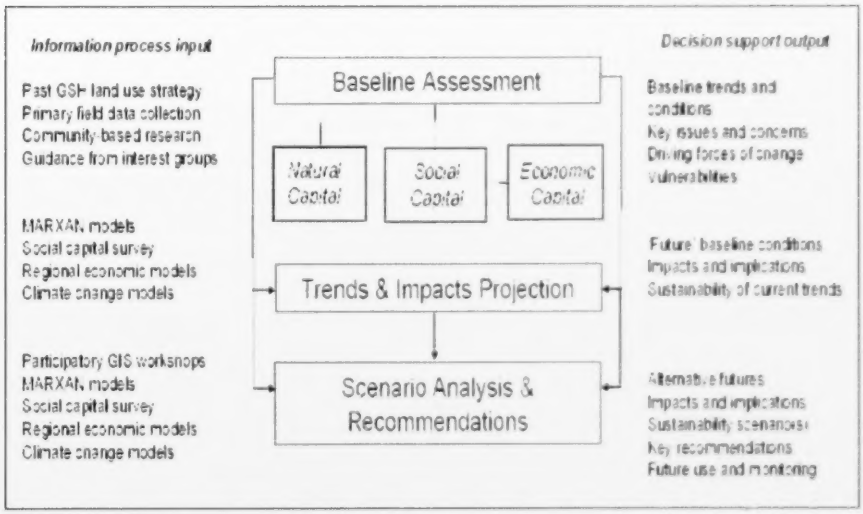
Table 1. Valued Ecosystem Components used for the GSH RES

Valued Ecosystem Components (VECs)		
Natural Capital	**Human Capital**	**Economic Capital**
Regional Climate	Regional demographics	Regional economic base
Geology (economic)	Regional and community change	Regional economic change
Gas reserves	Quality of life	Community economic change
Water resources	Local governance	Quality of life
Land cover and biodiversity	GSH use and change	Economic contribution of government
Terrain sensitivity	First Nations use and cultural governance instruments	
Soils		
Heritage resources		

From page 7 GSH-RES, 2007

The SAC developed an overall study framework to guide their activities, see Figure 4. (a.k.a Figure 1-1-3 GSH RES 2007 pp 9)

Figure 4. Overall Framework



From page 9 GSH-RES, 2007

A series of considerations guided the development of the regional environmental study including: sustainable development; socio-economic and cultural; ecological scale; cumulative approach, human footprint; protected areas; restoration; monitoring; groundwater conservation; and climate change. For details on these considerations see page 10 of the GSH-RES, 2007.

Chapter 2 of 'Part 1' of the study focuses on characterizing the existing biophysical and socioeconomic elements of the Great Sand Hills. The area is the largest continuous area of sand dune complex in southern Canada, dominated by wind blown (Aeolian) landforms. The Great Sand Hills is comprised of stabilized and active sand dunes interspersed with areas of sand flats. A number of species, both plant and animal, occurring in the GSH have protected status under both federal and/or provincial species-at-risk legislation. The area is sparsely populated with less than 7000 residents, the majority (60%) of whom reside in local hamlets, villages and towns. The nearest First Nation reserve (Nekaneet) is located over 120 km to the southwest of Swift Current. The area is considered to be of historically, culturally, spiritually and economically significant to many First Nations including the Blackfoot Confederacy of Alberta, Saskatchewan Treaty 4 First Nations, as well as numerous other First Nations groups in Saskatchewan and North Dakota. The primary industry–agriculture, including farming and ranching account for the majority (60-80%) of all employment in the region, some of the highest employment concentration values in Saskatchewan. Approximately 190,000 hectares of the GSH are occupied by 'ranches' the total economic value of which was approximately $45 million in revenues, rents, income and sales to the local and regional economy in 2005. The Gas Industry has become more prominent of late and provides indirect income support to local residents and revenues to local, regional and provincial governments. In 2006 the approximate total value of economic activity in the Great Sand Hills region represented just over $1,080,000.

Chapter 3 of Part 1 provides a more detailed overview of the previous planning initiatives in the region.

Baseline Assessment Report

'Part 2' of the GSH-RES contains 7 chapters which collectively establish the baseline for the area from which future analysis would be built. It includes information on the physical environment and natural resources, biodiversity of the area including the baseline MARXAN analysis, human capital, perception of development and associated impacts, economic capital and a summary of the section results. The approach and structure to the baseline assessment followed recent best practice guidelines addressing three major components:

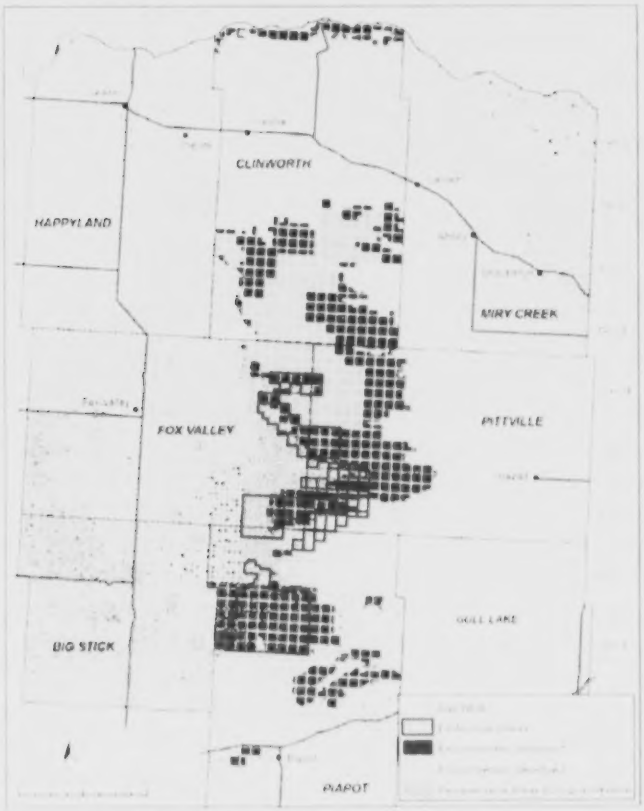
1. a profile of current and past natural, social and economic environmental trends and conditions in the GSH Study Area;
2. a summary of key natural, social and economic issues, concerns and questions that emerge from the baseline study variables and interactions;

3. Identification of significant issues across baseline study components, which are carried forward to trends projection, scenario analysis and management recommendations for maintaining the ecological integrity of the GSH. (from pp 25 GSH-RES, 2007)

Chapter 3 of 'Part 2' describes the MARXAN site-selection algorithm that was used to select areas of highest value for conservation while minimizing the overall "costs" of conservation. One million iterative attempts in MARXAN were made to find the minimum-cost solution.

Chapter 4 of 'Part 2' discusses the human capital of the GSH Study Area, including the current distribution of gas wells, now numbering over 1400. Figure 5 shows the distribution of gas wells (crosses) and areas that had approved EISs for the gas development (outlined in brown).

Figure 5. Distribution of EIAs, Gas wells and ES1 & ES2 lands



From page 111 GSH-RES, 2007

Chapter 5 addresses the perception of local residents of the GSH Study Area in relation to development and its associated impacts. A broad social survey was conducted of these residents between April and May of 2006 in order to gather information about the present and future potential impacts of three main economic activities in the region—gas industry, ranching and tourism. In addition, the SAC held separate workshops (survey sessions) with each special interest group between July and November 2006, in particular the ranching community, towns and RMs, environmental non-government organizations, the gas industry, various levels of government, and the First Nations.

Approximately 40% of the respondents to the surveys indicated they are dependent on revenue generated from the gas industry employment or from revenues generated for gas wells on their property. Over 80% of respondents rated themselves as having a moderate to very high level of knowledge about the GSH. Approximately 2/3 of respondents felt more gas development could occur while the remaining 1/3 felt it should stay the same or be reduced. Ranching was felt to have reached its 'natural' level and 2/3 felt it should remain at the same level of development. More tourism was supported by 2/3 of the respondents. Negative impacts form all industries was assessed with road and trail construction and damage to habitat being the items of most concern in relation to gas development. Overgrazing and cattle trails or high-traffic areas around water were considered the most damaging for ranching and litter and disruption from increased traffic being the biggest concerns with regards to impact from tourism. A series of mapping exercises was undertaken with the local special interest groups resulting in a series of maps with proposed future levels of protection, development and land use etc.

The discussion section indicated that there was a general consensus on maintaining the ecological integrity of the GSH Review Area and concerns over any practices, ranching, gas or tourism, that would result in significant surface disturbance to the GSH. In addition, environmental policy enforcement and monitoring were regarded by many stakeholders as inadequate and requiring strengthening. Trail and road management was seen as important for sustainability of the area as was increased protection of lands in the southern portions of the Review Area which have little to no formal protection at this time. The First Nations expressed concerns relating to ensuring access for ceremonial and spiritual purposes but also opportunities for TLE selection. Concerns were also raised that under current provincial legislation, once lands are formally transferred through a TLE selection, provincial "protections afforded" would no longer apply, and if so desired the lands could be developed.

By 2007 over 1500 gas wells could be found in the Great Sand Hills area representing approximately $5million in economic value to the Province and landholders.

Chapter 6 of 'Part2 ' provides an overview of the regional economy of the Great Sand Hills, which not surprisingly is dominated by ranching and gas development. The report states that the total potential economic value of ranching in the Study Area represents approximately $45 million in annual revenues, rents, income and sales to the local and regional economy. In 2007 the total economic value of gas extraction from the current 1,432 well pads (2 or more actual wells on some pads) in the study area represents approximately $5 million to the provincial government, and to local land holders and lessees, $2.5 million in local economic spin-offs and site payments. Obviously, the economic return numbers increase in time if ranching grows or the number of producing gas wells increases.

Chapter 7 of 'Part 2' characterizes and provides a summary of the current environmental conditions, trends and cumulative change for selected natural, social and economic variables in the GSH review and study areas. The study found that many of the biodiversity features identified during the analysis were not found in protected areas, leaving them vulnerable to disturbances associated with stock grazing and natural gas exploration and development. The gas development and maintenance related impacts from the industry cannot be considered independently of the drilling and exploration disturbances and road and trail development.

In much of the gas-developed areas of the western GSH, as well as in isolated patches on the eastern boundary, there are 2-3 km of road per km^2 of land or greater. The cumulative impacts of well pads and associated road and trails at this level, to service the infrastructure are a concern in relation to sustaining the ecological integrity of the GSH, particularly in terms of the implications for biodiversity, habitat fragmentation, and the spread of non-native species.

Livestock grazing has exerted a much longer-term and widespread influence on the Great Sand Hills. The most noticeable livestock related disturbance, often larger in size that a drilling pad, is that associated with high concentrations of cattle around watering holes. Cattle trails also contribute to surface disturbance at a much more distributed level.

To date tourism has a very minor environmental impact in the region, concentrated in terms of geo-graphic extent and magnitude.

The study reports that the baseline predictions for range health for the GSH suggested that 5% is in an 'unhealthy condition', 42 % is 'healthy, but with problems' and 53% is 'healthy'. All three human (anthropogenic) disturbances (gas well activity, roads and trails and livestock watering holes) result in reductions of rangeland health, and surprisingly to some, unhealthy point source conditions were mostly associated with watering holes, particularly within 250 metres of the

watering hole but extending out by as much as 750 metres. The overall additive (cumulative) impacts in the GSH of gas development and roads is significant and results in a reduction of range health, landcover and biodiversity across a broader area.

The chapter concludes that, "*Ranching and gas development are the key economic contributors to the region, providing direct and indirect income support to local residents and revenues to the local, regional and provincial governments. However, activities associated with ranching and gas development, in particular watering-holes, gas well development and roads and trails, pose considerable threat to the ecological integrity and sustainability of the GSH landscape.*" GSH-RES pp 161

"Management actions that limit surface disturbance ... are necessary to conserve the biological resources and maintain ecological integrity of the region." GSH-RES pp 161

Projected Trends and Alternative Future Scenarios

Part 3 of the GSH-RES contains 3 chapters which describe how and why the 'Core Biodiversity areas' were identified and selected in relation to past and future trends in surface disturbance while attempting to optimize the economic return from gas development.

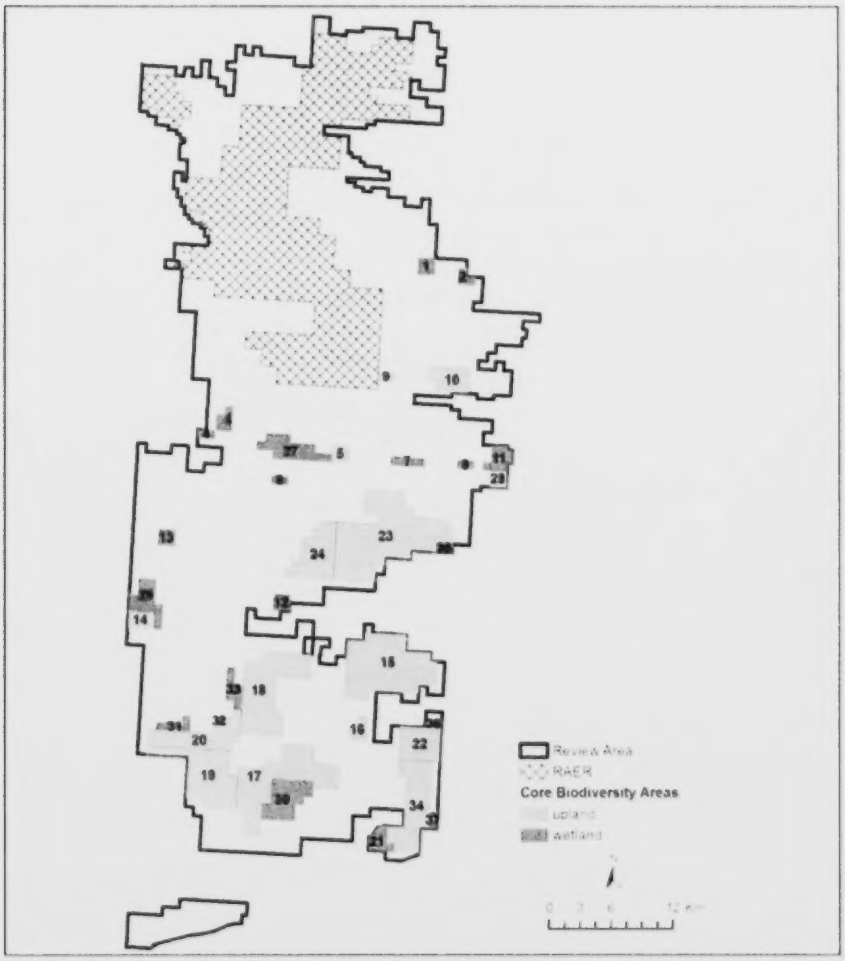
A key component of any planning exercise is to identify those areas of the landscape that because of their high conservation value, require more stringent protection than the remainder of the landscape. Since biodiversity is seldom distributed uniformly in any landscape, there is often the need to identify 'hotspots' of concentrations of biodiversity. Protection of these 'hotspots' is the first step in developing a defensible system of conservation areas in a region.

In addition to the 'hotspot' identification, areas with a high level of disturbance (greater than 1.9 km/km^2) were classed as "highly developed" and were excluded from selection as 'Core Biodiversity areas' as the SAC was interested in protecting areas that had not been substantially disturbed by human activity. The site selection algorithm called MARXAN was then used to identify the smallest overall area needed to meet planning goals and selecting clustered planning units as opposed to dispersed units to acknowledge issues of viability etc.

Land tenure was not an initial consideration or constraint in the MARXAN runs as the intent was to identify the best planning units through what is called a sum of runs process. Wetlands were added as areas in need of protection due to their limited occurrence and ecological

value to wildlife in the area and their direct correspondence with focal species hotspots.

Figure 6. Core Biodiversity Areas identified using MARXAN



From Page 171 GSH –RES

Once the Core Biodiversity areas had been identified the SAC turned their attention to predicting the levels of future development that might occur in the area for three scenarios. A preferred approach which strives to maintain biodiversity while allowing a certain level of development disturbance to occur was identified. It was felt that such an approach best approximated development that could be sustainable from a social, economic and biophysical perspective. Table 3-2-1 on page 176 of the GSH-RES outlines the Scenario assumptions used to model out the landscape to 2020. It is worth noting the concentration of core bio-diversity areas, both upland and wetland, identified in the southern portion

of the GSH (just north of the TransCanada Highway in the R.M. of Piapot). These areas represent a different, unique ecological, landscape feature that is not well represented in the protected, RAER areas in the north. It is also worth noting that while a large portion of these lands are held by the Crown, a number of the areas that were identified as core biodiversity areas using MARXAN, are under private ownership, a testament to the commitment of local landowners who have worked to maintained this ecologically sensitive area in the past. With increased development pressures from the gas industry it is hoped that the proposed disturbance levels recommended by the SAC can be used by those landowners to help them; consider the impacts of proposed developments on their lands, and continue to maintain the ecological integrity of the area.

Preferred Scenario

Section 2.6.1.2 of 'Part 3' page 185 of the GSH-RES describes the kinds of impacts on the environment that would occur under the 'Preferred scenario' projected out until the year 2020. The analysis focused on the Great Sand Hills Review Area and suggests levels of development in both the proposed Core areas and in the remaining Review Area that could occur and still (within the understanding of the ecosystem to date) not adversely damage the ecological integrity of the overall Review Area.

The preferred scenario recommends that the number of gas well pads on a given section be limited as should the amount of road constructed (the level of road construction is almost entirely controlled by the number of drilling pads). In addition given the nature of the impacts of livestock watering holes, no more than about 50 new watering sites should be added in the Review Area over the next 20 years.

The impact of the actual number of gas wells drilled could be offset by using directional or slant drilling from multi-well pads. Adding additional directional or slant wells off existing pads adjacent to the proposed core areas could also provide additional offsets of as much as 71 % of the core areas with a 1000m directional reach.

Following the preferred scenario would result in an additional 309 well pads and about 110 kilometers of roads and trails from the gas industry until 2020.

Based on the preferred scenario, the SAC estimated that on average 420 meters of additional road would be needed to establish each single well pad section (3.8 km/mi2 of total road/trails) and 1020 metres for the 2 well pads/section (4.4km/mi2). Locating pads adjacent to existing roads with only very short spur roads could reduce total road development substantially.

The core area with the highest biodiversity rank for all species is an area in the southeast portion of the review area that contains a glacial tunnel valley complex. The protection of this area is critical for preservation of the natural capital of the GSH.

Under the 'Preferred Scenario' the GSH Review area shows government revenues of approximately $4 million in royalties, $12 million in corporate taxes, $6 million in mineral leases and $23 million in surfaces leases for a total government revenue stream of about $45million between 2007-2021. The local economic contribution could add approximately $59 million to the local economy from 2007 to 2021.

Recommendations

Part 4 of the GSH-RES provides a description of how the recommended development plan and approach for the GSH was developed and list 62 specific recommendations for consideration. Found on Page 213 to 228 of *The Great Sand Hills Regional Environmental Study Final Report.*

The recommended development approach for the GSH Review Area focuses on sustaining the ecological integrity of the Great Sand Hills and is grounded in the realities of natural, social and economic capital for the region.

The report indicates that the protection of the bio-diversity and ecological integrity of the GSH, is critical not only for Saskatchewan but for Canada, North America and the world. This is based on the fact that temperate grasslands, savannas and shrub lands are the most impacted biomes globally.

Prior to presenting the recommendations the SAC provides a brief overview, "highlighting the broader initiatives that will support the overall sustainability of the local communities and people of the GSH and also serve as a foci" for their recommendations as follows: Status of Biodiversity and Conservation; Governance and Institutional Arrangements; Environmental Assessment; Reducing Impacts; Environmental Monitoring; Reclamation; and Sustaining Regional Communities. The report concludes with 62 recommendations for the Study Area/Review Area also grouped in to the same headings as above.

The public is encouraged to review the actual recommendations found on pages 213 to 228 as opposed to the executive summary section of the report. The actual recommendations were the focus of the technical review and it is possible that some of the nuances found in the actual recommendations may be lost in the summaries.

4. Technical Review Comments

Introduction

When Government provided the Environmental Assessment Branch with the environmental impact statement (EIS), a technical review of the proposed development approach and plan for the Great Sand Hills was initi[illegible]. Copies of the statement were provided to the members of the standing panel called the Saskatchewan Environmental Assessment Review Panel (SEARP) who were charged with conducting a technical review of the EIS and provide comment back to the Environmental Assessment Branch on the proposed development. Given the breadth of the recommendations found in the document, it was distributed to a number of agencies who are not often involved in technical review. Given the report was Government sanctioned, not that of one department, all powers of the Government from all legislation and areas of responsibility could come to bear on implementing the recommendations, so the broader review was deemed appropriate. It was also felt that some of the recommendations may lie outside of the powers and responsibilities of the provincial government and/or normal government functions and protocols and therefore, government directed that for those instances where a Ministry identified a recommendation should not move forward in the final Ministerial decision that a separate document would need to be prepared by the identifying Ministry for consideration by Cabinet.

In addition, the Ministry of Environment was directed by Government to initiate actions to establish the Core Bio-diversity areas as soon as possible so that some level of certainty could be establish in relation to the level of protection warranted in these ecologically important areas.

An initial meeting was held with members of the SEARP to discuss the outcomes to date of the initial round of technical review and the review continued through the provincial election and the reorganization of Ministries that followed. Therefore the technical comments contain references to past department names as well as current Ministries. 'Environment' refers to the comments that the Environmental Assessment Branch received from the other Branches that make up the Ministry of Environment as a technical reviewer and member of SEARP.

The following sections provide a summary of the comments received during the technical review.

Biodiversity and Conservation Lands Designation and Management

This is first major grouping of the recommendations made by the SAC in relation to the development in the Great Sand Hills. There were 13 recommendations in the subsection. Which are discusses under the corresponding headings below.

Core Biodiversity and Non-Reserve Areas

Scientific Advisory Committee Recommendations #1, #2 and #3

Government directed the Ministry of Environment to proceed with designation of the Core Biodiversity Areas (CBAs) as soon as possible. The Ministry has initiated this action while recognizing that a number of constraints may affect a rapid designation, including existing tenure arrangements etc. Environment has proposed a phased approach to this recommendation, proceeding with those areas with the least land conflict concerns first and then dealing with the more difficult ones. Until such time as the status of the areas is determined the Ministry has recommended that it would be appropriate to maintain the current Crown Mineral reserve limiting new Mineral claims. Currently about 575km^2 out of 800 km^2 (72%) of the proposed CBAs have some form of mineral disposition or gas development on them.

First Nations and Métis Relations generally agreed with the recommendations and would like to see these areas finalized as soon as possible so that treaty land entitlement (TLE) selections in the Great Sand Hills area can proceed. They also noted that lands under Indian reserve designation would likely be outside of current provincial protection and conservation activities and that additional arrangements or agreements may be necessary to assure long term integrated and sustainable approaches to these lands.

Agriculture indicated some concerns with designations if it meant there would be an impact on existing leases rights. Government Relations supported the intent of setting aside appropriate lands but cautioned that the existing legal framework and obligations through permits etc. need to be respected. In addition, they noted that some of the lands identified as CBAs were under private ownership. Industry and Resources supported the recommendation in principle but felt it is possible to achieve adequate environmental protection without resorting to restrictions on resource development or agricultural practices. While Industry and Resources supports the concept that, for sound ecological reasons the number of surface pads and roads be minimized, it must be recognized that there are limitations to slant and directional drilling technologies that must be considered. Industry and Resources agrees that, 'where practical' limiting drilling to a single surface pad within a section in the proposed core areas may be advantageous, some flexibility to consider site specific constraints (including safety, and biophysical limitations etc.) needs to remain. While

not a key element of the recommendation, the suggestion that government buy back rights is considered impractical by Industry and Resources.

The Environmental Assessment Branch conducts environmental assessment reviews on all 'development' (see section 2(d) of *The EA Act*) in Saskatchewan, including the Great Sand Hills Study area. There have been a number of environmental impact assessments (EIAs) undertaken in the Great Sand Hills Review Area. The decision by Government to add lands to some level of additional protection to assist in ensuring adequate safeguards for the environment would seem appropriate given the level of development that has occurred in the past. The cumulative impacts from surface disturbance in some areas appears to be in excess of what the environment can be expected to handle without causing reductions in the environmental sustainability and ecological integrity of the area. Given the findings of the assessment it seems appropriate that the levels of development proposed in the EIS in relation to the number of well pads, associated roads and trails and watering holes needs to be carefully monitored. Due consideration must be given to the proposed level of development in the Great Sand Hills Review Area, particularly development in the southern portions of the area, given the uniqueness of this feature at a provincial, national and international level. The EAB commits to ensuring that any project, alteration, expansion of activity which is likely to affect the GSH – Review area (a unique and rare feature of the environment, as confirmed and identified in the study) undergoes review pursuant to *The EA Act*. Additional work will be required with industry to develop appropriate protocols for calculating the level of effects of the proposed one/two pad approach in relation to actual areas disturbed and resulting edge from road/pipelines and pads combined. This has to be tempered with actual biophysical or ecological constraints of specific sites.

Land Use Zoning

Scientific Advisory Committee Recommendation #4

Government Relations indicated that the ES1 and ES2 zoning boundaries were established under municipal authority pursuant to *The Planning and Development Act* and fall within the rural municipality's jurisdiction. Continued work would be needed with the Rural Municipality's to adjust the current ES1 and ES2 designations. Developments proposed in the Great Sand Hills area must first receive Ministerial approval pursuant to *The EA Act*, before they go to the Municipality for a decision pursuant to the respective Rural Municipality's bylaws, and any subsequent changes to designation from ES1 to ES2 that may be needed so that activity can occur.

Industry and Resources supported the move to bring more science into the ES1 and ES2 designations.

Land Management Plans

Scientific Advisory Committee Recommendation #5

Environment supports the intent of this action to ensure that activities in the protected area are carried out according to the allowed uses in the Representative Areas Ecological Reserves (RAER) regulations and that generally speaking activities are conducted in a planned manner. Each RAER has a concept management plan and a specific set of regulations that identify allowed uses. Environment commits to, over time, developing more detailed management plans for all RAERs in the province. These will need to be developed in conjunction with Agriculture as these lands are administered by them and there are existing leases that must be managed in relation to the RAER designations. Environment indicates that environmental protection plans (EPPs) are already required for activities in the GSH Review Area. Industry and Resources indicated that they would participate in the development and implementation of a land management plan, and that special care needed to be taken in regards to lands with existing natural gas or petroleum leases.

Fire Ecology

Scientific Advisory Committee Recommendations #6 and #7

Environment supports the use of prescribed burning as an effective tool to achieve many management objectives including restoration and range maintenance in the GSH as proposed. However, the inherent risk associated with introducing fire on the landscape would require strict protocols under a supportive regulatory framework.

Currently government does not have a dedicated fund for prescribed burn programs. A fully endorsed prescribed burning program must include desired management objectives, weather condition monitoring, fuel moisture content and fire behavior analysis and modelling, smoke management considerations, public consultation and a whole series of addition protocols, emergency and contingency plans etc. Such a program would require dedicated technical staffing and resourcing to manage its design and implementation. Government's liability in the event of an escape fire is also a significant issue and as such changes to provincial legislation would be required to support a provincial scale prescribed burning program, especially as it pertains to landowners. Environment indicated that due to the technical expertise required and the inherent risk associated with prescribed burning that a provincial prescribed burn program could not be support by Fire Management and Forest Protection at this time.

Depending on circumstances and the location and nature of the burn being prescribed, such activities may require review pursuant *The EA Act.*

Finance commented that such dedicated funds have significant impact on government's ability to manage within the 'normal' priority-setting budget development approach, reducing government's ability to address competing funding priorities. Finance suggests that such recommendations not be part of the final Ministerial decision and that such a program seek funding through normal budgetary protocols which allow it to be considered in relation to other provincial pressures. Finance will be required to address their concerns in a separate document to be submitted to Cabinet, prior to a Ministerial decision being made.

Wide Ranging Species

Scientific Advisory Committee Recommendation #8

Environment supports research initiatives focusing on improving our understanding of important keystone species and their habitat. Work is carried out and partnerships formed when appropriate and when resources allow. Funding of Graduate research at the University level is also possible.

Rare-Species Database & Ords Kangaroo Rat

Scientific Advisory Committee Recommendations #9, #10 and #11

The Ministry of Environment Conservation Data Center (CDC) captures and manages species and habitat data for all areas of the province including the Great Sand Hills. The CDC also hosts modeling and analysis applications that can assist as decision-making tools. CDC will continue to collect, update and distribute environment data as appropriate.

Environment develops survey design standards and protocols, data models and quality control evaluation methodologies through collaborative processes with research organizations, ENGOs, industry and other clients. This ensures that appropriate steps are taken to ensure quality survey methodologies. To this end, Environment is developing a comprehensive species at risk (SAR) management framework in collaboration with the federal government. SAR management in the GSH must be based on plans and agreements which compliment the federal *Species ant Risk Act*, which includes the requirement to identify critical habitat. These plans will be developed on an ongoing basis and implemented as resources permit. It was also noted that technical review of the study methodology identified a number of concerns relating to detection probabilities for plants and animals, including birds. It may be that certain areas were not identified for protection due to low detection probabilities for species of concern and this would require some additional analysis to understand the significance of this matter in the future.

Wetlands

Scientific Advisory Committee Recommendation #12

Environment is supportive to gathering information that is beneficial to management of the Great Sand Hills including working with Saskatchewan Watershed Authority and other organizations like Ducks Unlimited to discuss what wetlands information is currently available and what kinds of projects might be possible and valuable for the future.

Communications Plans for Best Management Practices

Scientific Advisory Committee Recommendation #13

The Ministry of Environment communicates best management practices as appropriate and available for activities within its mandate. Examples of this include participating in the Prairie Conservation Action Plan, watershed planning and involvement with the GSH Planning District Commission, and numerous publications and electronic material. It should also be noted that permits are required for research activities within RAERs.

Governance

This is the second major subsection of the SAC Recommendations deals with issues of governance in the Great Sand Hills area intended to strengthen the understanding of land uses that are consistent with the principles of sustainability. There were nine specific recommendations in relation to the governance issues; technical comment in relation to these recommendations follows. It should be noted, that while Government Relations recognized the intent of the recommendations numbered 14 through 20 to support the concept of a larger and more integrated GSH Planning District Commission the Provincial government however, does not have the legal authority nor would it force such a matter. Government Relations will be required to address their concerns in a separate document to be submitted to Cabinet, prior to a Ministerial decision being made.

Strengthening the Representation and Mandate of the GSH Planning District Commission

Scientific Advisory Committee Recommendation #14

Government Relations commented that they, along with Environment, Agriculture and Industry and Resources provide ongoing advice to the Commission in order to harmonize decision making processes between jurisdictions. Additional resources and funding to support the Commission initiatives would need to be sought through customary budgeting process. A collaborative approach between municipalities and the province is necessary to facilitate the recommendations (#14-20) made by the SAC in this regard. Various provincial Ministries continue to work in concert with the Commission to improve the administration and

governance structure of the Commission. Environment indicated that the Commission is an advisory body and that the ministry will continue to work in an integrated fashion to help ensure integrated land use planning, regulation and decision making occur. Environment does not support the delegation of Ministerial authority for areas within its mandate at this time.

Clarifying the Mandate of the GSH Planning District Commission as One of Maintaining Ecological Integrity of the GSH and Adopt a New Structure for the Commission

Scientific Advisory Committee Recommendations #15 and #16

Government Relations commented that the authority for altering the Commission's mandate and representation lies with the affiliated municipalities. Generally, the experience of the commission has been to manage the ecological integrity of the GSH in relation to development pressures while respecting provincial interests. The Commission functions in an advisory role to the affiliated R.M.s and as such the R.M.s still maintain their respective legal authority for managing land use etc. The Commission, as an advisory body, has the ability to hire an environmental monitor as suggested in recommendations 18, 19 & 20. *The Planning and Development Act*, 2007 provides the flexibility to the affiliated municipalities to transform the Commission from an advisory committee to a corporate planning district authority. This includes the decision to invite additional participants to become members, such as other R.M.s, provincial Ministries or Agencies and First Nations. Initial consultation in the GSH area suggested some municipal support for this option. The overall size of the commission needs to be kept in mind as significant expansion can lead to significant logistical problems.

Representative Membership on the GSH Planning District Commission

Scientific Advisory Committee Recommendation #17

The Minister of Environment indicated that they along with Municipal Affairs, Agriculture and Energy and Resources provide ongoing advice and assistance to the Commission in order to harmonize decision making processes between jurisdictions, and that they will continue to work with the Great Sand Hills Planning District Commission as appropriate. Also see the comments above as they relate to this recommendation as well.

Enhance Capacity and Coordination for Environmental Follow-up through the GSH Planning District Commission and the Commission's Environmental Monitoring Mandate

Scientific Advisory Committee Recommendations #18 and #19

Agriculture and Food indicated that their Lands Branch monitors Crown oil and gas surface leases and has a defined process in place requiring 'as built reports' and 'abandonment reports'. On site inspections are

performed by Agrologists where problems are identified. Government Relations comments for the recommendation above support the position that the Commission can hire staff as they require. The Ministry of Environment was unclear of the benefits that these environmental monitors would provide and felt that if funds were made available for monitoring it would be better spent in a coordinated fashion by Ministries with land ownership or mandates around environment management. It was noted by technical reviewers that the role envisioned by recommendation #19 is inconsistent with the role of government Ministries to make decisions, within their own mandates, that are in the public interest.

Centralized Information/Resource System for the GSH Planning District Commission

Scientific Advisory Committee Recommendation #20

The Ministry of Environment's Conservation Data Center and Geomatics Branch centrally manage a variety of species information. Much of this information is available online in formats that can be used for modeling and decision making. The Ministry works cooperatively with other data holding Ministries and Agencies to ensure coordinated information delivery. A centralized system as proposed takes considerable resources to establish and maintain in association with the GSH Planning District Commission. Special funding for such a system would need to be sought through customary budgeting process. No estimates of costs to establish or maintain such a system were provided by the SAC.

Sustained Funding for the GSH Planning District Commission

Scientific Advisory Committee Recommendation #21

The Ministry of Environment indicated that they do not track the geographical source of moneys being provided in relation to hunting and fishing licenses or permits at more than a broad regional level, so attributing those moneys collected in the GSH Study Area would be very difficult. In addition, the fees are deposited directly into 'General Revenues' and are therefore not at the Ministry's disposal to redistribute. Additional comments from Agriculture and Food further clarify the contributions of Crown leases to the General Revenue Fund (GFR). Government Relations supports the opportunity to enhance municipal planning and regional planning capacity through existing programs. The level of funding to support the Commission is subject to the formal procedures for both the municipal and provincial budget processes. It is understood that the Commission is looking at alternative funding support including a recent partnership between the Saskatchewan Association of Rural Municipalities (SARM), the Saskatchewan Urban Municipalities Association (SUMA) and Government Relations. This partnership has established the Municipal Development Program for building capacity in

inter-municipal cooperation and seeking alternative sources of funding for planning and projects. In view of this, while there is support for the intent of recommendation s 20 & 21; the fiscal implications of these recommendations for both municipalities and the province would require a detailed assessment. Funding decisions for the Commission must be respectful of the municipal and provincial budgetary processes.
Finance commented that such dedicated funds have significant impact on government's ability to manage within the 'normal' priority-setting budget development approach, reducing government's ability to address competing funding priorities. Finance suggests that such recommendations not be part of the final Ministerial decision and that such a program seek funding through normal budgetary protocols which allow it to be considered in relation to other provincial pressures. Finance will be required to address their concerns in a separate document to be submitted to Cabinet, prior to a Ministerial decision being made.

Special Funding Arrangements to Support Research in the GSH

Scientific Advisory Committee Recommendation #22

The Ministry of Environment generally support appropriate research activities and leads, supports or partners with appropriate groups to seek out information on high priority items. These activities are subject to normal government budgeting process and currently there are no dedicated designated funds to support such research activities in the Great Sand Hills.

Acts and Regulations

The third major subsection of recommendations from the SAC dealt with issues relating to various pieces of existing provincial legislation.

The Environmental Assessment Act

Recommendations 23 through 26 relate to the matters in the government's Environmental Assessment Program.

Review of GSH RES under *The Environmental Assessment Act*

Scientific Advisory Committee Recommendation #23

On July 11, 2007 the Minister of Environment (i.e., the minister responsible for this initiative's lead agency) submitted the SAC-developed report, as delivered, as government's impact statement related to the development project for consideration under *The Environmental Assessment Act*. The statement has been reviewed as required by section 11(1) of *The Environmental Assessment Act*.

Cumulative Effects be considered in EA Process

Scientific Advisory Committee Recommendation #24

The idea that impacts may arise from effects that are cumulative is not, in fact, a new one. Indeed general guidance regarding the conduct of an EIA produced as *the EA Act* was coming into force in 1980, clearly referenced cumulative effects as one of the many types of effects to be considered through an EA undertaken in Saskatchewan. Through *the EA Act*, the 'impacts' of developments likely to have significant environmental effects are assessed. The legislation does not distinguish between or amongst categories of impact (e.g., positive / negative; direct / indirect; immediate / delayed; localized / widespread; short term / long term; reversible / irreversible) nor does it distinguish between or amongst categories of effects (e.g., primary, secondary, cumulative or synergistic) which are understood to lead to such impacts. Any and all environmental change processes likely to be set in motion or accelerated by a development (i.e., its effects) and the consequences (or 'impacts') of the resulting changes are to be studied through the impact assessment.

Impacts must be assessed with awareness that a development's impact may be only one of several different impacts converging on the part of the environment that is of concern i.e., the assessment must be contextually sensitive. This doesn't mean that "other projects" are drawn into the decision but rather that the models used to understand the development in question's impacts need to be good predictors of reality. All jurisdictions have, in practice however, struggled with technological limitations. Only recently have modeling tools become affordable, robust, or reproducible enough to support such study. While the Minister has authority under section 5 of *the EA Act* to conduct research and studies into matters respecting the environment, environmental quality or environmental planning to support the program's effective delivery, the capacity for doing so is limited by available resources.

The EA program should explore the nature and potential of partnership approaches being used in other jurisdictions (particularly Alberta) to fund landscape-level baseline work in regions under (or anticipated to be under) development pressure.

Technological and resource (and therefore information / knowledge) limitations have likely represented some of the most significant barriers, but full realization of cumulative effects assessment within the EA practice in Saskatchewan, may also have been frustrated by an organizational design for the program's delivery that has seen work processed in a flow-through model not designed to *see* an emerging picture at the landscape level. While the program should continue to develop technological solutions, an institutional response is needed to

construct the emerging development picture in an ongoing manner. Structural changes within the program's core delivery functions intended to provide institutional focus and systematic orientation in relation to the issue of cumulative impact assessment (including staff training, delivery processes and the identification of section 5 study needs) are being implemented.

Develop further guidance and decision support materials for EA related to 'development' in the GSH

Scientific Advisory Committee Recommendation #25

Creating guidance and decision support materials for the Great Sand Hills region as recommended by the SAC is both doable and desirable. Screening guidance could be developed drawing on study findings, e.g. determining the significance of disturbance (edge and area) in relation to a particular proposal. Scoping guidance could be developed to focus impact assessments by drawing on regional plan elements, as these might be variously approved, thereby tiering future developments within the objectives of the regional plan. (Further information about the EA program's screening and scoping processes can be found on the Ministry's website – Environmental Assessment/A Guide to the EA Process.)

Add the requirement for follow-up to *the EA Act*

Scientific Advisory Committee Recommendation #26

From a good practice perspective follow-up is a necessary element within any fully functioning EA program. *The EA Act* does not however need to be amended to provide for a follow up program as is being recommended by the SAC. Indeed a "post-approval follow-up mechanism" was formalized in *the EA Act*:

> *Environmental protection does not stop when approval is given to begin a new development. The act provides for continued monitoring; it permits the appointment of officers who can administer the act and the regulations and who will have the authority to carry out inspections and obtain information required for the administration of the act and the regulations.* Second reading of Bill No. 102 – An Act respecting the Assessment of the Impact on the Environment of New Developments, May 14 1980.

If a development is proceeding in violation of *the EA Act*, the Minister may seek an injunction to stop the development or may seek to prosecute the offense. If a project is approved, it can proceed only subject to its EA approval (and any terms and conditions therein) and any required licenses, permits and environmental protection measures; the EA decision however supersedes all other provincial approvals and directs government's subsequent regulatory actions. Most approvals contain terms and conditions dealing with monitoring requirements and the need to address unanticipated impacts. The Minister has the power to conduct investigations where it is believed an approval is not being complied with. Where a proponent of a previously approved development intends to make

a change, further approval must be obtained for the proposed change (section 16 – request for change). The minister can approve the change, refuse to approve the change, or require the proponent to conduct an EIA of those changes as per the processes for a development. Further the Minister has authority under section 5 to conduct research and studies into the environment, assessments, statements, environmental quality and environmental planning.

Aspects of the type of follow-up program envisioned by the SAC, as described above, are realized within the program's current delivery but development of a full compliance / follow-up function within the EA program has been limited by the availability of resources to direct to such matters. Further, implementation of a development as defined by an EA approval must be coordinated across government making follow-up a distributed function. While this outcome is consistent with the all-of-government sustainability focus of Saskatchewan's EA decision, the drawback is that an emerging picture from follow-up / monitoring findings of individual agencies is not stitched together by the parties within a comprehensive / integrated (EA) post approval study process. The institutional response that may be needed to find gains in regards to follow-up relates to the need for landscape-level work in regions under development pressures as described in the response to recommendation #24.

The Provincial Lands Act

Scientific Advisory Committee Recommendation #27

This Provincial Lands Act is administered jointly by the Ministries of Agriculture and Environment. Legislative activity is directed by the Lieutenant Governor in Council and approved by the Legislative Assembly after consultation with respective Ministers charged with administering the Act and in consultation with the Legislative Instruments Committee of the Legislature. There is currently a review ongoing in relation to Crown land management for Crown resource lands in the Province. Outcomes from that review may or may not result in changes to the Provincial Lands Act.

The Heritage Property Act

Scientific Advisory Committee Recommendation #28

The HPA already provides for the recognition and protection of heritage property based on their cultural and aesthetic value. Section 2i(iii) of the HPA defines "heritage property" as any property that i of interest for its architectural, historical, cultural, environmental, archaeological, palaeontological, aesthetic, or scientific value. Also, the "Provincial Heritage Property Designation - Guide to Preparing a Nomination" specifically lists cultural, spiritual and aesthetic values as key criteria for evaluating provincial heritage significance. As the process for nominating

Provincial Heritage Property is open to the public, Saskatchewan First Nations and others interested in the GSH region are encouraged to nominate potential candidates that would benefit from this type of heritage property recognition and protection. Under Section 3(2) of the HPA, the Minister may, on behalf of the Government of Saskatchewan, enter into any agreement with the Government of Canada or any other nation, the government of any other province, or any person, agency, organization or association respecting the coordination, preservation, study, interpretation and promotion of the appreciation of heritage property in the province. Under this section, agreements may be entered into with appropriate First Nations governments. Reference in the recommendation to *The Ceremonies Act* should likely be *The Cemeteries Act.*

Amendments to sections 65(1) and 66(1) of the HPA were proposed in 2002 to clarify the provincial Crown's intent concerning "ownership" of archaeological objects and human remains from unmarked burials. It was suggested that the term "ownership" should be replaced with statements concerning the Crown's trust or stewardship responsibility. The amendments, however, did not proceed due to legal concerns about creating uncertainty in the legislation about the province's rights and obligations and its legal ability to regulate and protect the resource. Since Section 3(1)(b) of the HPA gives the province the ability to transfer ownership, a stewardship role and responsibility is being practiced in principle.

Reducing Impacts

The fourth major subsection contains 6 recommendations that focus on reducing impacts on the landscape that could impair the ecological functions of the GSH Area.

New well pad surface leases/roads and trails

Scientific Advisory Committee Recommendations #29 and #30

Both the Ministry of Environment and Industry and Resources provided comments that were generally supportive of minimizing impacts, they also note that slant and directional drilling does have some technical and environmental limitations. A strict limitation of 2 wells pads per section could force a producer to establish a pad on a less desirable site, even though a better site may have existed on an adjacent location but the section already has 2 or more pads on it. Clearly some professional judgment needs to be brought to bear on drilling programs to ensure that site specific issues are considered while meeting the overall intent of reducing future disturbance in the GSH Review Area. Two pads per section could be suggested as a general guiding principle, but flexibility must be maintained in order to fully address site specific and unique situations.

It is recognized that limiting surface disturbance is essential. The degree of surface disturbance should be reflective of the two pad maxima recommended by the SAC.

In relation to improving 'incident' management and adopting a similar process as exist for spills reporting by Industry and Resources, reviewers felt that while the current process may be able to be adapted over time resource limitations prohibit an immediate implementation of this recommendation.

Distributed Watering Systems

Scientific Advisory Committee Recommendations #31, #32 and #33

The Ministry of Environment works with the Ministry of Agriculture to cooperative review proposed watering systems and this does include a review of the sensitive species in the CDC database. In the review process Agriculture assists with the rare and endangered species ground truthing. Further, ongoing water development has been promoted by Agriculture as a best management practice to enhance livestock performance and to fully utilize the rangeland resources in accordance the contracts that have been issued by them to producers. The Crown is also bound by *The EA Act* as are private developers like gas companies. If an action is proposed to be undertaken that meets the definition of 'development' in *The EA Act* an environmental assessment is required and no action should proceed until a Ministerial decision has been made. Agriculture has and continues to work closely with the Environmental Assessment Branch to ensure that proposed activities that they permit are reviewed appropriately. Further research that looks at habitats with varying degrees of grazing pressure (facilitated through the use of distributed watering systems) will be needed to done in order to make valid –predictions about long-term impacts on range health, invasive plants, and sensitive habitats and focal species.

Fragmentation by Linear Features

Scientific Advisory Committee Recommendation #34

The Ministry of Environment already implements this recommendation in all Representative Areas Ecological Reserves (RAER). No new authorization for developments is generally granted in these areas unless specified in the legislation. However existing licenses, permits dispositions etc. and the rights granted them are respected. These principles would also apply to any new areas that might be designated as RAER. Both Environment and Industry and Resources recognize the benefits of minimizing surface disturbance in sensitive areas, however, some flexibility must exist to accommodate situations where alternatives are not practical or desirable. If the overall goal is to reduce impacts in the GSH, there has to be an opportunity to balance actual ecological impact against hard and fast statements.

Environmental Monitoring

This subsection only contains one recommendation but includes a number of features that an environmental monitoring program should include.

Establish ongoing environmental monitoring program for the GSH

Scientific Advisory Committee Recommendation #35

The Ministry of Environment recognizes that environmental monitoring is important in relation to the Great Sand Hills; however, the Ministry feels that any such program should form part of an overall provincial monitoring program. Environment indicates that significant work remains in designing and delivering such a program, particularly since the SAC did not identify many important items including, potential objectives, management decisions or scientific questions the monitoring program is to address.

Agriculture commented that they would also require clarification as to the intent of this recommendation, particularly in relation to what is to be monitored. "Would it be the environmental impact of ranching activities on their lands? Would they become paid oil and gas development watchdogs? Or is something else envisioned?"

It can be reasonably expected that a monitoring program should include, but would not be limited to: processes to determine if surface disturbance objectives are being met, and that the various vegetation communities are being maintained or improved (quantity and quality) over time.

Finance's comments in relation to the dedication of provincial revenues to specific activities and the imposition of provincial funding obligations apply to this recommendation as well. Funding such programs must fit into the Government's priority-setting budget development process and the implementation of such dedicated funding as proposed reduces Government's ability to respond to and address other competing funding priorities.

Reclamation

This subsection contains 5 recommendations.

Review existing reclamation guidelines and update.

Scientific Advisory Committee Recommendation #36

Agriculture has indicated that they will assess reclamation standards as required. While this project has been considered in the past it has been postponed due to other priorities. The Ministry will review available resources in multiple branches and assess this work item, in terms of Provincial priorities. For some time the Land Protection Section has felt that a review should be conducted to assess the effectiveness of past

mitigation, restoration and reclamation practices associated with oil/gas development in the GSH. Due to the unique and sensitive nature of the lands in the GSH, both Ministries of Agriculture and Environment have been involved in determining best practices. Environment Lands Branch, supports conducting such a review but this would require some reallocation of resources to accomplish it in a timely fashion.

Reclamation Fund

Scientific Advisory Committee Recommendation #37

The Ministry of Environment generally supports reclamation work when required. The Ministry of Agriculture is the land administrator and responsible agency for permitting the agricultural activities. Again, the Ministry of Environment does not account geographically for the fees it collects from hunting and fishing etc. and such fees are deposited into General Revenues. Such a fund would need to be budgeted through Government's normal priority-setting budget development process. Finance's general concerns regarding dedicated funding also apply to this recommendation.

Reclamation monitoring

Scientific Advisory Committee Recommendation #38

The Ministry of Environment indicated that while the Ministry of Agriculture administers most lands within the GSH area, a large percentage of the GSH is native prairie, representing significant habitat for rare species so Environment also has a role to play. The harmonized process used in dealing with gas exploration and development allows for both Ministries to review reclamation plans put forward by a proponent. Industry is required to have environmental monitors on site and those monitors are typically involved in developing project specific reclamation plans. Some project approvals include requirements to monitor reclamation success for a period of two to three growing seasons.

Reclamation and restoration

Scientific Advisory Committee Recommendation #39

Environment commented that restoration is an ongoing process and it has to be made clear to developers and agricultural producers alike, that restoration of disturbed sites, control of invasive species etc. needs to be factored in a as cost of operating in the GSH. A complicating factor will be the apparent disparity between the resources available for the gas industry to respond and comply versus the agricultural industry. Creating a balanced approach to this matter will likely prove to be a challenge.

Native Seed Sources

Scientific Advisory Committee Recommendation #40

Environment agrees that native seed sources should be used and this requirement often appears in approvals, however this can be a difficult

requirement to meet given the limited availability of local seed sources. Delays in seeding caused by limited seed source can result in potential erosion that might be more damaging than using non-local sources. This assumption however, has not been thoroughly tested. It was hoped, that the demand for local seed sources would help to drive the creation of a local native seed industry. To date it is not clear that this industry has advanced to the level to match demand.

Sustaining Regional Communities

Compensating Agricultural leaseholders

Scientific Advisory Committee Recommendation #41

Agriculture provided the following comments, the current compensation model is developed based on sound policy analysis and takes into account a number of factors, including other offset benefits of holding Crown agricultural leases such as favourable rent and long term assignable lease privileges. Further, this recommendation would provide an unfair advantage to specific Crown leaseholders based on geographic location. In essence Crown land tenants from across the province will seek similar enhanced sharing arrangements. It is also important to note that under the current Crown rental system, impacted lands are withdrawn from the agricultural lease and there is no requirement to provide a share of oil and gas surface rentals as the former Crown land leaseholder does not have occupant status under *The Surface Rights Arbitration Act.* As well, by policy, the Crown already provides a sharing model that is in excess of what would be provided in the private sector rental market.

Finance's comments in relation to dedicated or directed funds also apply to the implementation of this recommendation. Agriculture has indicated that they feel this recommendation not make up part of the Minister approval and will be required to address their concerns in a separate document to be submitted to Cabinet, prior to a Ministerial decision being made.

First Nations Consultation

Scientific Advisory Committee Recommendation #42

The Ministry of First Nations and Métis Relations (FNMR) supports the recommendation in principle but indicate that they believe the threshold for duty to consult with Blackfoot Confederacy of Alberta is low. "We do however; need to keep the Blackfoot Confederacy informed." A higher level of engagement with First Nations in Saskatchewan is supported and First Nations have a strong economic interest in the area and desire to settle Treaty Land claims as soon as possible. Environment indicated that they consult with First Nations as required to meet their 'duty to consult' utilizing the most recent guidelines issued by the Ministry in this regard.

Indian and Northern Affairs Canada encourage meaningful dialogue with First Nations to ensure treaty and traditional rights are protected.

First Nations council of Elders and Traditionalists

Scientific Advisory Committee Recommendation #43

FNMR agrees in principle to this recommendation. FNMR supports the need to establish a protocol between First Nations, industry and government concerning the treatment of sites of cultural or spiritual significance. However the role of this Council within the broader Great Sand Hills (GSH) land use management process should be clarified to ensure that it plays an advisory role only within specific situations. The Council should also be integrated with existing First Nations advisory groups which documents culturally significant sites throughout the province. Environment supports the intent of the recommendation but clarification would be needed in regards to the council's role in relation to landscape level issues. The Heritage resources Branch regularly consults with a number of First Nations groups concerning the management of First Nations heritage resources and would be glad to pursue possibilities for further collaboration and cooperation.

Scientific Advisory Committee Recommendation #44

As part of this category the SAC also recommended that ceremonial sites of particular interest to First Nations be identified as part of government's implementation activities. FNMR commented that First Nations people have used the GSH historically to engage in spiritual and cultural activities, such as ceremonies and the collection of medicinal plants. We support the involvement of First Nations membership on the GSH Planning District Commission. The proposed Council of Elders and Traditionalists should also be involved in helping to identify such sites and to advise on protocols around access and adjacent activities.
The Heritage Resources Branch also supports First Nations access to the GSH to engage in spiritual and cultural activity, and is committed to assisting in facilitating such access and use.

Heritage Resources

Scientific Advisory Committee Recommendation #45

The Heritage Branch provided the follow comments: Assuming that the reference to proper ceremonial practice is with regard to the discovery of a "sacred site" (i.e. a "site of a special nature" per s.64 of the HPA), it should be noted that the Heritage Resources Branch consults with the SICC and its Elders' Advisory Committee on Cultural Resources Management on these matters. In collaboration with this committee, the Heritage Resources Branch has developed protocols concerning the discovery, handling and treatment of "sites of a special nature" (including burial sites). In accordance with the protocol, any such site which is fortuitously encountered (whether in the course of land development or natural erosion) is subject to Elder consultation and appropriate cultural

ceremony. In accordance with the province's "Archaeological Burial Management Policy", the reburial of archaeological burial remains at or near the original site of discovery is the first priority. FNMR also supports this recommendation.

Labour and Employment

Scientific Advisory Committee Recommendation #46

Regional Economic and Cooperative Development provided extensive comments in this regard and feel that the recommendation is being met through a number of activities/agreements, including:

- Saskatchewan Regional Economic and Co-operative Development (RECD) and Western Economic Diversification (WED) are currently managing partners of the Canada Saskatchewan Business Service Centre (CSBSC).
- The CSBSC, also known as ***business infosource***, is was established for the purposes of sharing a common facility and resources focused on the provision of information services to new and existing businesses.
- CSBSC offers quick and easy access to sources of information on government programs and services on behalf of 47 federal and 67 provincial government departments and agencies.
- The CSBSC is in a co-location partnership at the Saskatoon Region Enterprise Centre at 345-3rd Avenue South, Saskatoon, along with the Regional Office of RECD, the Saskatoon Regional Economic Development Authority, and the Saskatoon Chamber of Commerce.
- The South West Centre for Entrepreneurial Development Inc. is located in Swift Current and is a partnership between *Saskatchewan Regional Economic and Co-operative Development* , Canada- Saskatchewan Business Service Centre – Regional Access Site, Southwest Community Futures Development Corporation (CFDC) – Western Economic Diversification, Southwest Regional Economic Development Authority and the Centre for Entrepreneurial Development.
- Regional Access Sites provide access to government and business information through a network of regional access partners, in order to make information and walk-in services readily available to smaller communities throughout Saskatchewan.
- There are 16 sites operating in various parts of the province typically located within Regional Enterprise Centres. These regional enterprise centres also host a variety of business development workshops throughout the year.
- Since the opening of the Centre in September 1994, a significant increase in client inquiries has occurred. From just over 5,000 inquiries in 1994-95, the Centre handled 319,615 requests for business information in 2006-07, including over 304,400 website visits.
- While the majority of CSBSC clients are private sector users, there is significant use by intermediaries such as Community Futures

Development Corporations, Chambers of Commerce, REDAs, economic development organizations, and business related associations.
• The most frequent type of inquiry is that of information sourcing, with business start-ups and financing inquiries closely following.
• The CSBSC is part of the national Canada Business Service Centre (CBSC) initiative designed to improve business access to information on a wide range of government services, programs and regulations.
RECD also provides funding support to 28 Regional Economic Development Authorities to utilize strategic planning, co-operation and collaboration with individuals, partners and communities, to enhance economic growth in the REDA region. A key component of planning is the support to community-owned project development and the engagement of local businesses in long-term planning. Business Retention and Expansion initiatives are being undertaken to assist those local businesses in achieving their growth strategies.
Under core funding, REDAs are actively involved in 42 projects and 100 initiatives in the current year. Since 2003-04, REDA projects and initiatives funded out of their core operating dollars have yielded capital investments totaling over $180M and impacted on the creation of 443 jobs and maintenance of 397 jobs.

Since 1998-99 the REDAs have used capital provided in the REDA Enhancement Fund to leverage investments of over $5M for 238 projects. These projects have realized a capital investment to date of over $89M and have created 468 jobs and maintained over 226 jobs. These numbers are projected to increase over the life of these projects.

In the southwest region, there are two REDAs, Cypress Hills located in Maple Creek and Southwest located in Swift Current. These REDAs are actively involved in a Business Retention and Expansion initiative for the region – Action Southwest. In response to business and community needs, the two REDAs are working on addressing issues of labour retention, housing shortages and youth retention.

FNMR suggest that any follow up actions include First Nations and Métis communities in initiatives that explore the development of Labour and employment opportunities.

Scientific Advisory Committee Recommendation #47

In regards to developing partnerships with government agencies and the GSH Planning District Commission, RECD agrees that a closer working relationship could be undertaken with the GSH Planning District. For example, RECD currently hosts a REDA Working Group forum, comprised of representatives from 10 REDA representatives and the Minister and staff from RECD. This would provide an excellent forum for a representative from the Great Sand Hills Planning District Commission to make a presentation to REDAs on how the two groups could work

together more closely. The REDA Working Group also intends to explore ways to collaborate more closely with the Community Futures Development Corporations funded by WED.

Scientific Advisory Committee Recommendations #48 and #49

Finance provided comments in relation to recommendations #48 and #49 regarding issues of Business tax relief and modifications to create a progressive income tax structure for new employment as follows:
With respect to the tax-related recommendations, they are generally proposing that the common province-wide tax structures be set aside in favour of special tax reductions and exemptions for certain individuals and businesses resident in the GSH region. Finance notes that while such a policy may indeed benefit the targeted region, it would also create inequities in the application of provincial taxes between the GSH and the rest of the province, shift the overall provincial tax burden to the rest of the province and would very likely result in demands from other regions for similar tax preferences, thereby eroding provincial revenues. Furthermore, recent reforms of the provincial personal and business tax systems have focused on broadening the tax bases to allow for the lowering of general tax rates, rather than creating further targeted tax incentives, which tend to have a distortionary influence on economic behaviour. The tax-related recommendations have very broad tax policy implications and should not make up part of the final Ministerial Decision. Finance will be required to address their concerns in a separate document to be submitted to Cabinet, prior to a Ministerial decision being made.

Earnings and New Construction

Scientific Advisory Committee Recommendation #50

Finances comments above also apply to recommendation #50, although it was noted that some of the element of this recommendation in relation to property tax breaks could be implemented by the Rural and Urban Municipalities if they wished to do so. Finance will be required to address their concerns in a separate document to be submitted to Cabinet, prior to a Ministerial decision being made.

Economic Concentration and Capital Investment

Scientific Advisory Committee Recommendation #51

RECD feels that this recommendation is being met with the current Small Business Loan Association program.
RECD currently operates the Small Business Loan Association (SBLA) program. The SBLA program is an effective tool communities are using to assist in building strong and prosperous business communities across the province.

- Since start up of the program in 1989, the province has approved loans totalling $60,394,722 for over 10,103 entrepreneurs that have resulted in the creation and maintenance of 27,178 jobs.

• RECD works with the over 235 active SBLAs to extend financing to small and start-up businesses that require funding beyond the scope of traditional lenders. An SBLA can be formed by the incorporation of four or more volunteers from community-based interest groups – individuals, partnerships, co-operatives or corporations.
• There are numerous SBLA's operating in the southwest region that are capable of providing access to financing for various types of businesses.
• Approved by the department, SBLAs can access an interest-free line of credit of up to $200,000. The SBLA can then use this line of credit to make loans of up to $15,000 to new and existing businesses for capital costs.
• In June 2004, the government launched the Youth Opportunities Unleashed (YOU) initiative for entrepreneurs between the ages of 18 and 35. This initiative is an enhancement to the SBLA program that adds training and mentoring components to assist young entrepreneurs to become successful.
• The success of the SBLA program can be attributed to the community involvement and the nature of peer lending. The default rate over the last several years has, and continues to be low for a high risk program.
• The continuation of the SBLA program is an important tool in fulfilling a gap in financing that is not available through traditional lenders.
• The SBLA Program is an important tool to creating wealth and jobs in rural Saskatchewan. Close to 90 per cent of the program activity is in communities outside of Regina and Saskatoon.

Scientific Advisory Committee Recommendation #52

In regards to recommendation #52 dealing with the elimination of corporate taxes for new business in the GSH Region. This tax-related recommendation has very broad tax policy implications and should not make up part of the final Ministerial Decision. Finance will be required to address their concerns in a separate document to be submitted to Cabinet, prior to a Ministerial decision being made.

Manufacturing

Scientific Advisory Committee Recommendations #53 and #54

In relation to both recommendations #53 and #54, RECD offered the following comments: RECD believes that the intent of this recommendation is being met through various current initiatives. RECD through education, training and funding to REDAs, is supporting the development of manufacturing clusters and other clusters in the province. RECD recently partnered with the Saskatchewan Economic Developers Association and Business Retention and Expansion International to host an International Business Retention and Expansion Conference, titled "Growing from Within—Thinking Regionally – Succeeding Globally, from June 4-8, 2007 in Regina. The conference offered over 65 speakers from around the world specializing in a variety of

topics including sessions on the building of clusters as a critical component of competing in today's global markets.

In the southwest region and as part of a business retention and expansion initiative, Action Southwest, which includes REDAs and Community Futures partners, a manufacturing cluster strategy has been developed.

Ranching

Scientific Advisory Committee Recommendations #55

Recommendation #55 recommends that Saskatchewan Environment implement improved education in best management practices for the ranching industry. This recommendation is more related to SAF's agricultural mandate. Currently within SAF, forage specialists provide advice on the management of forages and the business of land management. It is within SAF's mandate to help implement environmentally sustainable practices by:

i. Reducing impacts: by advising and counseling ranchers in environmentally sound, best management practices for range and water management.

ii. Monitoring: by advising and teaching monitoring principles and identifying and providing training in the use of various monitoring tools to measure forage establishment and assess forage health.

iii. Reclamation: by providing advice on reclamation practices, selection and establishment and management of native species and the management and eradication of non-native species.

iv. Sustaining Regional Communities and Economies: by providing analysis of and recommending alternative ranching practices where changes in land use practices in the GSH affect ranch sustainability.

Scientific Advisory Committee Recommendation #56

Recommendation #56 proposes that, from an economic perspective, dedicated environmental monitors be hired locally from within the ranching community, since they are out in the field and see what is going on as part ongoing ranching activities. While the Ministry of Environment is supportive of monitoring activities in general, the Ministry procures such funding for operations through the normal budgeting processes and allocated resources on a provincial basis. The Ministry believes however, that the role of monitoring would be best filled by providing the Ministry responsible for with appropriate resources to carry out these activities. Adding additional levels of review that are not well defined will not assist in ensuring appropriate monitoring occurs. Agriculture and Finance both raised concerns with how the proposed funding approach to this recommendation and as such feel that the funding component (dedicated fund) not be part of any subsequent Ministerial decision. This issue will need to be covered off in the submission to Cabinet regarding dedicated funding for any of the recommendations made.

Scientific Advisory Committee Recommendations #57 and #58

With respect to recommendations #57 and #58 that focus on water quality and quantity issues, Saskatchewan Watershed Authority provided the following comments: The Final Report proposes establishing water quantity and water quality baselines for water resources in the Great Sand Hills. Water quantity and water quality must be considered together. It is debatable however, whether or not a one time water sampling and water-level measurement constitutes a baseline. In some shallow aquifers, the water table fluctuates one half metre or more during the year. Hence, a one-time measurement does not really constitute a baseline due to natural variability of the groundwater resource. The Authority suggests that the proposed assessment do the following: a) evaluate ground water availability and quality; b) assess surface water resources (wetland abundance included) and determine their interaction with ground water; and c) include the design and installation of an effective, ongoing water resource monitoring network/program.

The Saskatchewan Watershed Authority believes additional clarity is needed to implement this recommendation. For example, what is the level of detail required and who will pay for the work? The Authority is willing to draft Terms of Reference and/or a Project Proposal for the proposed water resource assessment for discussion and adoption by The Great Sand Hills Planning Commission (client) and the Authority's executive management. Industry and Resources supported the concept of conducting water quality assessments prior to gas development activity for specific project areas within the GSH Study Area. The company and IR should both be involved in these studies design and timing.

Tourism and Eco-tourism

Scientific Advisory Committee Recommendation #59

The Ministry of Environment indicated during review that as the result of an alternative dispute resolution (enforcement Action) a sign and shelter have been erected at the 'dune turnaround' on the Straw Road.

First Nations and Métis Relations support the idea of acknowledging First Nations and Métis people's history in the area, including current cultural interests in the area. First Nations and Métis interests in the area should be encouraged and assisted to become engaged in tourism/ecotourism strategies and activities.

Gas Development

Scientific Advisory Committee Recommendations #60

RECD believes that the essence of this recommendation is captured in the SaskMade program, which promotes Saskatchewan manufactured products and buying local. Existing companies are linked to the Manufactures Guide database and are provided stickers and posters depicting the SaskMade Logo.

Scientific Advisory Committee Recommendations #61

Recommendation #61 suggests that "environmental performance bonds" be posted by all companies operating in the Great Sand Hills. The Ministry of Energy and Resources (MER) has legislation in place that dictates how leaks, blow-outs, contamination etc., is to be handled and there can be significant consequences for any company that does not comply. In the event that a company goes bankrupt, or in the case of a previously contaminated site where it cannot be determined who the responsible party was, MER's Orphan Well Program is in effect and can be used to cover the cost of restoration/reclamation. Agriculture added that where development occurs on oil and gas leaseholds the proponent is in a contractual arrangement with the Crown as land owner and the Oil and gas company as lessee. The Agricultural Crown leaseholder is not party to this agreement. The Crown, as landowner, can adjust rental on areas damaged or needing to be taken out of production and, as landowner, needs to be the prime decision maker in regards to utilization of performance bonds.

Scientific Advisory Committee Recommendations #62

Recommendation #62 speaks to assessment the current and projected gas reserves in the GSH. The Ministry of Energy and Resources currently calculate natural gas reserves on an annual basis and economic valuations are conducted quarterly as part of the Provincial Budget process.

Concluding Comments

Scientific Advisory Committee Concluding Comments

The Ministry of Environment recognizes the Scientific Advisory Committee's hard work and efforts in considering many options and the concerns that they were presented with. Each action within the Ministry of Environment mandate will be considered. Agriculture and Food (SAF) also felt that considerable effort and thought has gone into development of the report and much of the research and findings will prove very valuable as more detailed sustainable land use strategies are developed for the area. SAF was also pleased to see the level of inclusion and collaboration that is proposed in the report. Saskatchewan Watershed authority provided comment congratulating the study's authors and contributors on their work towards sustaining the ecological integrity of the GSH, which they believe to be a unique and treasured natural area of the Province. Industry and Resources (IR) appreciates the unique ecological, cultural and socio-economic attributes of the GSH, and have actively supported and participated in the development of appropriate land use and management plans for the GSH since before 1991. IR also acknowledges that the final report appears to address the commitment made by the Government of Saskatchewan with respect to the recommendations of the 2004 GSH Land Use Strategy Review Committee. Finance, while recognizing the appropriateness of review of the GSH study, expressed concern with a number of the recommendations contained therein. Particularly where the

SAC made recommendations in relation to how any particular recommendation should be funded. Any recommendations that would impose funding obligations on Government or propose that the Province-wide tax structures be set aside in favour of special tax reductions and exemptions for certain individuals and business residents in the GSH region are cause for concern. While they may benefit the targeted region they would create inequities in the application of provincial taxes between the GSH and the rest of the province, shift overall provincial tax burden to the rest of the province and would likely result in further demands that could erode provincial revenues. Other means would need to be found within the normal Government budgeting practice to addresses those recommendations of the study that spoke to dedicated funding etc.

Conclusion of the Technical Review

Discussion, stemming from the Environmental Assessment Branch's review of the various technical comments received on the EIS, has resulted in the conclusion that the public review of the EIS should now proceed. The technical review comments and the comments received during the public review of the EIS will be considered by the Minister.

Based on review of these comments the Minister will make a decision according to section 15(1) of *The Environmental Assessment Act* to:

(a) give ministerial approval to proceed with development and may impose any terms and conditions that are considered necessary or advisable; or
(b) refuse to approve the development.

If the Minister was to approve the development the issues identified during the review of the EIS could be addressed through terms and conditions of the approval or through subsequent regulatory approval processes managed by various Ministries and Agencies.

Comments should be sent to:

Attn: Mr. Brent Bitter
Ministry of Environment - EAB
Room 486, 3211 Albert Street
Regina, SK S4S 5W6
(re: EIS-GSH RES)

References

Epp, H.T. and L. Townley-Smith., 1980. The Great Sand Hills of Saskatchewan. Saskatchewan Department of Environment, Regina

Saskatchewan Environment and Public Safety (SEPS)., 1991. Great Sand Hills Land Use Strategy

Mondor, C., 1985. Natural Areas and Sites of Canadian Significance in Saskatchewan. Blue Jay 43: 107-114.

The Great Sand Hills Advisory Committee., 2007. The Great Sand Hills Regional Environmental Study, Final Report

The Great Sand Hills Land Use Strategy Review Committee., 2004. The Great Sand Hills Land Use Strategy Review Report and Recommendations